Claims

[c1] 1. A polygonal fuel cell comprising:
a cathode layer having a tubular shape;
a contact layer electrically coupled to and disposed on said cathode layer to leave an uncovered cathode surface portion;
an electrolyte layer disposed on said uncovered cathode surface portion; and
an anode layer electrically isolated from said contact layer, disposed on said electrolyte layer such that said polygonal fuel cell has a polygonal cross section.

[c2] 2. The polygonal fuel cell of claim 1 wherein said polygonal cross section is selected from the group consisting of triangles, rectangles, and hexagons.

[c3] 3. The polygonal fuel cell of claim 1 wherein said polygonal cross section is equilateral.

[c4] 4. The polygonal fuel cell of claim 1 comprising two of said contact layers disposed on adjacent polygonal faces, wherein said polygonal cross section is a hexagon.

[c5] 5. A polygonal fuel cell comprising:
a cathode layer having a tubular shape;
a contact layer electrically coupled to and disposed on said cathode layer to leave an uncovered cathode surface portion;
an electrolyte layer disposed on said uncovered cathode surface portion; and
an anode layer electrically isolated from said contact layer, disposed on said electrolyte layer such that said polygonal fuel cell has a polygonal cross section selected from the group consisting of equilateral triangles, squares, and hexagons.

[c6] 6. The polygonal fuel cell of claim 5 comprising two of said contact layers disposed on adjacent polygonal faces, wherein said polygonal cross section is a hexagon.

[c7] 7. A polygonal fuel cell stack comprising:
a plurality of polygonal fuel cells comprising contact layers and anode layers, having a polygonal cross section, and being adapted to be electrically coupled

in parallel to satisfy a current requirement and in series to satisfy a voltage requirement;
a cathode bus adapted to electrically couple said contact layers;
an anode bus adapted to electrically couple said anode layers; and
a plurality of interconnection strips adapted to electrically couple said polygonal fuel cells, said cathode bus, and said anode bus.

[c8] 8. The polygonal fuel cell stack of claim 7 wherein said polygonal cross section is selected from the group consisting of triangles, rectangles, and hexagons.

[c9] 9. The polygonal fuel cell stack of claim 7 wherein said polygonal cross section is equilateral.

[c10] 10. The polygonal fuel cell stack of claim 7 wherein each of said polygonal fuel cells comprises two of said contact layers disposed on adjacent polygonal faces, wherein said polygonal cross section is a hexagon.

[c11] 11. A polygonal fuel cell stack comprising:
a plurality of polygonal fuel cells comprising contact layers and anode layers, having a polygonal cross section, and being adapted to be electrically coupled in parallel to satisfy a current requirement and in series to satisfy a voltage requirement;
a cathode bus adapted to electrically couple said contact layers;
an anode bus adapted to electrically couple said anode layers; and
a plurality of interconnection strips adapted to electrically couple said polygonal fuel cells, said cathode bus, and said anode bus,
said polygonal cross section being selected from the group consisting of equilateral triangles, squares, and equilateral hexagons.

[c12] 12. The polygonal fuel cell stack of claim 11 wherein:
each of said polygonal fuel cells comprises two of said contact layers disposed on adjacent polygonal faces; and
said polygonal cross section is a hexagon.

[c13] 13. A method of making a polygonal fuel cell comprising:
providing a cathode layer having a tubular shape;

electrically coupling and disposing a contact layer on said cathode layer to leave an uncovered cathode surface portion;
disposing an electrolyte layer on said uncovered cathode surface portion; and
disposing an anode layer, electrically isolated from said contact layer, on said electrolyte layer such that said polygonal fuel cell has a polygonal cross section.

[c14] 14. The method of claim 13 wherein said polygonal cross section is selected from the group consisting of triangles, rectangles, and hexagons.

[c15] 15. The method of claim 13 wherein said polygonal cross section is equilateral.

[c16] 16. The method of claim 13 wherein electrically coupling and disposing a contact layer on said cathode layer comprises electrically coupling and disposing two of said contact layers on adjacent polygonal faces, wherein said polygonal cross section is a hexagon.

[c17] 17. A method of making a polygonal fuel cell comprising:
providing a cathode layer having a tubular shape;
electrically coupling and disposing a contact layer on said cathode layer to leave an uncovered cathode surface portion;
disposing an electrolyte layer on said uncovered cathode surface portion; and
disposing an anode layer, electrically isolated from said contact layer, on said electrolyte layer such that said polygonal fuel cell has a polygonal cross section selected from the group consisting of equilateral triangles, squares, and equilateral hexagons.

[c18] 18. The method of claim 17 wherein:
electrically coupling and disposing a contact layer on said cathode layer comprises electrically coupling and disposing two of said contact layers on adjacent polygonal faces; and
said polygonal cross section is a hexagon.

[c19] 19. A method of making a polygonal fuel cell stack comprising:
electrically coupling a plurality of polygonal fuel cells, in parallel to satisfy a current requirement, in series to satisfy a voltage requirement, by interposing a plurality of interconnection strips therebetween, said polygonal fuel cells

comprising contact layers and anode layers and having a polygonal cross section;

electrically coupling a cathode bus to said contact layers by interposing a plurality of interconnection strips therebetween; and

electrically coupling an anode bus to said anode layers by interposing a plurality of interconnection strips therebetween.

[c20] 20. The method of claim 19 wherein said polygonal cross section is selected from the group consisting of triangles, rectangles, and hexagons.

[c21] 21. The method of claim 19 wherein said polygonal cross section is equilateral.

[c22] 22. The method of claim 19 wherein:

each of said polygonal fuel cells comprises two of said contact layers disposed on adjacent polygonal faces; and

said polygonal cross section is a hexagon.

[c23] 23. A method of making a polygonal fuel cell stack comprising:

electrically coupling a plurality of polygonal fuel cells, in parallel to satisfy a current requirement, in series to satisfy a voltage requirement, by interposing a plurality of interconnection strips therebetween, said polygonal fuel cells comprising contact layers and anode layers and having a polygonal cross section;

electrically coupling a cathode bus to said contact layers by interposing a plurality of interconnection strips therebetween; and

electrically coupling an anode bus to said anode layers by interposing a plurality of interconnection strips therebetween,

said polygonal cross section being selected from the group consisting of equilateral triangles, squares, and equilateral hexagons.

[c24] 24. The method of claim 23 wherein:

each of said polygonal fuel cells comprises two of said contact layers disposed on adjacent polygonal faces; and

said polygonal cross section is a hexagon.